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VOLUME XLVIII, 1937

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JANUARY, 1937

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The making of blocks and printing all **illustrations** will be charged to authors. The editor will furnish cost of same when requested.

Stated Meetings of The American Entomological Society will be held at 8.00 P. M., in 1937, on the fourth Thursday of each month excepting June, July, August, November and December, and on the third Thursday of November and December.

Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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ENTOMOLOGICAL NEWS

VOL. XLVIII. JANUARY, 1937 No. 1

Insect Remains.

By H. ELLIOTT MCCLURE, University of Illinois, Urbana, Ill.

In the past two years, while studying soil populations, the question has often come to mind, "What becomes of all of the millions of insects that live on the soil surface and what are their chances of preservation?" Obviously, the answer is, "They all die and disintegrate and the chances of preservation are very small."

In an effort to answer this more accurately, in October and November of 1934 ten random one-foot-square samples of soil-surface debris and soil, scraped to a depth of one fourth of an inch, were taken into the laboratory and the living insects driven from them by means of a modified Berlese funnel. Then the debris and dirt were examined by hand with a hand lens for insect remains. Since this time over 100 square feet have been examined with results comparable to those given here.

The samples were taken in an open floodplain forest near Danville, Illinois. At this time of year all of the summer forms were dead, dying, or in hibernacula. These insects, in dying, crawled or dropped to the soil surface and it is believed, but not demonstrable, that the insect remains on the surface in the winter are of the insects of the preceding summer. As quickly as the insects die they are attacked by ants, collembola, millipeds and other forms, so that their bodies are soon broken up into the component segments or sclerites.

From the ten square feet of debris were driven 1320 arthropods and 20 snails, and in the debris were found the remains of 239 arthropods and the shells of 62 snails. The live insects averaged 132 per square foot and the remains 23.9 per square foot. There were 5.5 times as many living insects as recognizable remains.

Of the insect remains 172, or 72%, could be identified to order, 50, or 21%, to family, and only 7, or 3%, were readily recognizable to species. These were, of the beetle remains: *Pelidnota punctata* Linn., 1 elytron; *Phyllotreta vittata* Fabr., 2 elytra; *Notoxus* sp., 2 elytra and abdomen; Hemiptera: *Hymenarcys equalis* (Say), one nearly complete insect; *Solubea pugnax* (Fabr.), one nearly complete insect; *Menecles incertus* (Fabr.), one nearly complete insect; *Triphleps insidiosus* (Say) one nearly complete insect. Many of the other insect remains, especiallly the elytra of many beetles, would be recognizable to specialists of the group concerned. The pentatomids were probably the remains of insects that had just died and the sclerites had not yet broken apart. The beetle elytra were identified by the markings.

In contrast to the insects, 58 snails, or 93%, were identifiable as to genus or species. These were:

Retinella indentata (Say)	29
Euconulus fulvus (Müller)	20
Succinea avara Say	3
Punctum pygmaeum (Drup.)	3
Gastrocopta armifera (Say)	1
Gastrocopta pentadon (Say)	1
Polygyra sp. (Fragment)	1
	58

Although there were only one-fourth as many snails as insect remains, due to their structure, there were eight times as many recognizable snails as there were recognizable insects.

The parts of the insects which are most durable are: Hemiptera, scutellum, pronotum, meso- and metathorax, abdominal sterna, and hemelytra; Coleoptera: elytra, head capsule, pronotum, legs, meso- and metasterna and hind wings; Lepidoptera: parts of moth pupae, head capsules of larvae, and bits of wings; Hymenoptera: forewings, head capsule, abdomen, and metathorax; Homoptera: forewing; Diptera: wings and thorax, head capsule and puparial shell; spiders: cephalothorax and legs. 28% of the insect remains were unrecognizable bits of chitin.

Among the living insects taken from the same ten square feet 37.8% were mites and 11.4% were collembola. No remains of either of these were found, probably because of their minuteness. Of the living insects 24% were Coleoptera and of the remains, 35.4% were Coleoptera. Diptera and dipterous larvae composed 10% of the living insects, but dipterous remains were only 1.4% of the total. Spiders formed 1% of the living forms, but 5.7% of the remains. Pentatomids formed 4% of the remains, but only .15% of the living insects. 9.7% of the remains were hymenopterous and, of the live insects, 1.1%. The accompanying tables gives further information.

Snails possess greater potentiality for preservation than insects, for as they die, the numbers of remains are increased on the soil surface from year to year, unless covered by some deposit. Because of this, there were three times as many snail remains as living snails on 10 square feet. With insects the opposite is true, for there are fewer recognizable remains on the soil surface than there are living forms. These become consistently less identifiable, due to detrition, as they age. Assuming that it is possible from these observations to draw any conclusions, it may be stated, that for each snail shell found, there have been at least 300 insects which have died, leaving little or no recognizable remains. Furthermore, assuming that these insect remains are not more than one year old, it may be said, that, at the end of each year, the insects possess only an 18.1% possibility of preservation and the snails, 93%.

Table 1. Showing the numbers of macroscopic dead and living organisms on the soil surface of ten square feet in open woodland during the months of October and November, 1934.

ORGANIC REMAINS			LIVING ORGANISMS		
Group	No.	%	Group	No.	%
Mollusca	62		Mollusca	20	
Arachnida	14	5.7	Arachnida	15	1.0
			Acarina	500	37.8
			Annelida	20	
			Cheliferidae	50	3.7
			Chilopoda	10	.7
Pentatomidae	10	4.0	Pentatomidae	2	.15
Coreidae	1	.4	Lygaeidae	12	.9
Miridae	2	1.0	Collembola	150	11.4
Misc. Hemiptera	15	6.0	Misc. Hemiptera	5	.3

ORGANIC REMAINS			LIVING ORGANISMS		
Scarabaeidae	5	2.0	Thysanoptera	20	1.5
Carabidae	10	4.0			
Cerambycidae	1	.4			
Chrysomelidae	2	1.0			
Anthicidae	2	1.0			
Misc. Coleoptera	65	27.0	Misc. Coleoptera	320	24.2
Lepidoptera	10	4.0	Lepidoptera larvae	7	.53
Formicidae	10	4.0	Formicidae	15	1.0
Misc. Hymenoptera	14	5.7	Chalcidoidea	2	.15
Chrysopidae	3	1.0	Chrysopidae	1	.1
Psocidae	1	.4			
Cicadellidae	2	1.0	Cicadellidae	1	.1
Sarcophagidae	1	.4	Diptera	90	6.7
Diptera puparia	3	1.0	Diptera larvae	50	3.7
Locustidae	1	.4			
Unrecognizable chitin	67	28.0	Misc. Groups	30	2.2
Total Arthropods	239	98.4	Total Arthropods	1300	97.7
Snails per square foot	6.2		Snails per square foot	2	
Arthropods per sq. ft.	23.9		Arthropods per sq. ft.	130	
Total arthropods identifiable:			Total arthropods identifiable:		
To order	172	72%	To genus	1300	100%
To family	50	21%			
To genus	7	3%			
Total snails identifiable:			Total snails identifiable:		
To genus	58	93%	To genus	20	100%

The Coleoptera or Beetles of Georgia.

P. W. Fattig, Emory University, Georgia.

(Continued from Volume XLVII, page 238.)

In addition to those mentioned in Part I, I wish to thank Dr. W. J. Brown, of the Department of Entomology, Department of Agriculture, Ottawa, Canada, for determining many of the Elateridae.

ELATERIDAE.

8554—ADELOCERA IMPRESSICOLLIS Say. Valdosta III, 21, '31.

8560—A. MARMORATA Fab. Stone Mt. V, 10, '31; Atlanta, X, 18, '28.

8561—A. DISCOIDEA Web. Atlanta VI, 2, '29; VII, 13, '30; Stone Mt. VI, 8, '30; VI, 16, '29; VI, 18, '30; VI, 25, '30; Yonah Mt. VI, 10, '36.

8562—A. AVITA Say. Atlanta V, 12, '36; Quitman VI, 17, '31.

8564—Lacon rectangularis Say. Folkston V, 8, '32.

8565—L. curtus Lec. Albany VII, 30, '31.

8571—Alaus oculatus Linn. Macon IV, 13, '31; Stone Mt. IV, 16, '31; IV, 24, '32; Tallulah Falls IV, 21, '31; Atlanta V, 21 to VII, 3 (7); Albany VI, 1, '32.

8572—A. myops Fab. Camilla IV, 3, '36 (4); Thomasville IV, 4, '36; Cordele IV, 12, '31; Perry IV, 13, '31; Thomson IV, 17, '36 (4); Stone Mt. IV, 17, '31 to V, 11, '31 (198); Milledgeville IV, 18, '36 (3); Warrenton IV, 18, '36 (4); Douglasville IV, 25, '27; Folkston V, 8, '32; Cairo VI, 18, '31.

A. sp. Swainsboro V, 1, '36.

8576—Hemirhipus fasciculatus Fab. Columbus IV, 29, '31.

8593—Pyrophorus physcierùs Germ. Albany VI, 18, '31.

8596—Monocrepidius lividus DeG. Atlanta VI, 5 to VIII, 20 ('30); Hazelhurst VI, 6, '36; Head River VI, 26 to VIII, 16 (9); Rome VI, 29, '31; St. Simons Island VII, 22, '29; Albany VII, 30, '31; Cuthbert VII, 31, '31; Blairsville VIII, 31, '29.

8597—M. aversus Lec. Rome V, 26, '31.

8600—M. lepidus Lec. Cairo VI, 18, '31.

8601—M. vespertinus Fab. Cairo VI, 18, '31; Macon VI, 21, '29; Atlanta VII, 7 to VIII, 2 (6).

8602—M. scissus Schfr. Cornelia V, 16, '28.

8607—M. auritus Hbst. Atlanta VI, 8, '36; VI, 11, '36; VI, 13, '36 (2); West Point VI, 19, '32.

8609—M. bellus Say. Cornelia V, 16, 28.

8611—M. blandulus Lec. Athens VI, 13, '32.

Conoderus difformis Fall. Hazelhurst VI, 17, '36; VI, 22, '36.

C. fuscosus Blatch. Hazelhurst VI, 6, '36; VI, 17, '36 (2).

8613—Aeolus amabilis Lec. Macon IV, 30, '28.

8617—Pityobius anguinus Lec. Brunswick VI, 5, '29.

8619—Limonius auripilis Say. Atlanta V, 21, '36; V, 22, '36; VII, 4, '29; Rome V, 26, '31.

8625—L propexus Cand. Stone Mt. IV, 24 to V, 29 (4); Atlanta V, 2, '34; V, 13, '34; Lithonia V, 5, '36; Toccoa V, 14, '30.

8629—L. plebejus Say. Kennesaw Mt. V, 14, '36; Yonah Mt. V, 30, '34.

8633—L. quercinus Say. Stone Mt. V, 29, '36; Clarkesville V, 31, '36 (5); Atlanta VI, 1, 36 (2); VI, 13, '36 (2); Yonah

Mt. VI, 10, '36 (2); VI, 20, '35; Tray Mt. VI, 11, '36; Unicoi Gap VI, 28, '35.

8635—L. BASILARIS Say. Kennesaw Mt. V, 14, '36; Cornelia V, 16, '28; Clarkesville V, 31, '36; Tray Mt. VI, 11, '36; VI, 19, '36; Yonah Mt. VI, 23, '35 (2).

8653—L. DEFINITIS Zieg. Kennesaw Mt. V, 7, '36 (3).

8654—PHELETES NIMBATUS Say. Savannah IV, 11, '31.

8662—ATHOUS BRIGHTWELLI Kby. Yonah Mt. VI, 10, '36 (2); Atlanta VI, 12, '29; Athens VII, 2, '31.

8667—A. CUCULLATUS Say. Dalton V, 25, '31; Atlanta VI, 21, '29.

8669—A. EQUESTRIS Lec. Perry IV, 13, '31.

8679—A. LENGI Dury. Hartwell VI, 13, '32.

8715—LUDIUS PYRRHOS Hbst. Atlanta V, 13, '29; VI, 12, '29; VI, 19, '30; Fort Valley VI, 1, 31; Yonah Mt. VI, 10, '36; Blairsville VI, 26, '31; Head River VII, 10, '36.

8717—L. BIVITTATUS Melsh. Cornelia VI, 16, '29.

8728—L. SIGNATICOLLIS Melsh. Kennesaw Mt. IV, 26, '36; Atlanta V, 19, '32 (2); Dahlonega VI, 22, '32.

8748—L. SULCICOLLIS Say. Tate VI, 27, '32.

8757—L. TRIVITTATUS Lec. Tray Mt. VI, 11, '36; VI, 19, '36; Griffin VI, 12, '27; Neel Gap VI, 14, '31.

8761—L. AETHIOPS Hbst. Hiawassee V, 28, '34; Yonah Mt. VI, 22, '35.

8780—L. INFLATUS Say. Yonah Mt. VI, 10, '36.

8781—L. CRASSUS Lec. Douglasville VII, 15, '27.

8797—L. DIVARICATUS Lec. Stone Mt. VI, 18, '30; Toccoa VII, 3, '31; Canton VII, 17, '31.

L. sp. Atlanta V, 29, '29.

8813—HEMICREPIDIUS DECOLORATUS Say. Barnesville VI, 12, '27.

8814—H. MEMNONIUS Hbst. Atlanta VI, 11 to VII, 18 (7).

8817—H. BILOBATUS Say. Atlanta VI, 30 to IX, 11 (7).

8853—MELANACTES PICEUS DeG. Yonah Mt. VI, 10, '36.

8855—M. MORIO Fab. Atlanta VI, 21, 28; VII, 5, '31.

8858—M. REICHEI Germ. LaGrange VI, 10, '32.

8861—PARALLELOSTETHUS ATTENUATUS Say. Yonah Mt. VII, 28, '34.

8869—ORIGMUS CAROLINENSIS Schfr. Stone Mt. VII, 19, '29.

8873—ORTHOSTETHUS INFUSCATUS Germ. Atlanta VI, 6, '27; VII, 5, '31; VIII, 8, '28; VIII, 16, '34; Cairo, VI, 18, '31; Blue Ridge VI, 26, '31; Rome VI, 29, '31.

8878—Dolopius lateralis Esch. Blue Ridge VI, 26, '31.
D. sp. Blairsville VI, 25, '31.
8883—Sericus silaceus Say. Augusta VI, 9, '32; Yonah Mt. VI, 10, '36 (3); Tray Mt. VI, 11, '36.
8897—Agriotes oblongicollis Melsh. Clayton V, 28, '34; Tray Mt. VI, 19, '36.
8906—Glyphonyx recticollis Say. Hamilton VI, 17, '31; Newman VI, 17, '31 (2); Blue Ridge VI, 26, '31; Ellijay VI, 27, '31 (2); Jefferson VII, 2, '31 (3).
8907—G. testaceus Melsh. Cleveland VII, 10, '31.
8909—G. quietus Say. Toccoa VIII, 16, '29.
G. sp. Atlanta V, 19, '36.
G. sp. Newnan VI, 19, '31.
8934—Elater nigricollis Hbst. Cleveland VII, 10, '31.
8935—E. linteus Say. Tate VI, 27, '32.
8936—E. sellatus Dej. Kennesaw Mt. IV, 14, '36; Jasper VII, 17, '31.
8940—E. verticinus Beauv. Canton VII, 17, '31.
8948—E. collaris Say. Athens VI, 13, '32.
8955—E. obliquus Say. Jasper VII, 17, '31.
8956—E. pusio Germ. Tate VII, 17, '31.
8960—E. pedalis Germ. Rockmart VI, 25, '32.
E. sp. Yonah Mt. VI, 10, '36; Tray Mt. VI, 19, '36.
8978—Blauta cribraria Germ. Rome VI, 20, '32.
8980—Megapenthes limbalis Hbst. Stone Mts. VI, 8 to VII, 6 (10); Toccoa VI, 16, 29; Atlanta VI, 16 to VII, 4 (8); Cartersville VII, 4, '34.
8983—M. rufilabris Germ. Atlanta VI, 30, '27.
8994—Dicrepideus ramicornis Beauv. Rome VI, 29, '31.
8996—Ischiodontus scleatus Say. Atlanta VII, 7, '30; VII, 17, '35.
I. sp. Atlanta VII, 4, '31.
9009—Anchastus fuscus Lec. Atlanta VIII, 5, '34; VIII, 11, '34.
9010—A. bicarinatus Lec. Albany VI, 1, '32.
9015—Melanotus scrobicollis Lec. Atlanta VI, 23, '27; Stone Mt. X, 27, '29.
9019—M. decumanus Er. Camilla IV, 3, '36; Warrenton IV, 18, '36 (4); Atlanta V, 4 to X, 7 (11); Stone Mt. V, 11, '31; V, 12, '31; VI, 16, '32; Yonah Mt. V, 30, '34.
9021—M. despectus Cand. Dalton VI, 7, '31.
9031—M. leonardi Lec. Cleveland VII, 10, '31.
9035—M. communis Gyll. Stone Mt. III, 22, '36; Gainesville V, 17, '36; Atlanta VI, 1, '35; Snellville VI, 12, '31; Mon-

roe VI, 12, '31; Blairsville VI, 15, '29; Yonah Mt. VI, 15, '36.

9036—M. FISSILIS Say. Okefenokee Swamp V, 6, '33; Stone Mt. V, 9, '31; Atlanta VI, 4 tc IX, 11 (7); Washington VI, 9, '32; Head River VI, 12, '36; VI, 26, '36.

9040—M. PARUMPUNCTATUS Melsh. Yonah Mt. V, 30, '34.

9043—M. EMISSUS Lec. Rome VI, 20, '32.

9044—M. INFAUSTUS Lec. Quitman VI, 17, '31.

9048—M. PERTINAX Say. Jasper VII, 17, '31.

9051—M. AMERICANUS Hbst. Blue Ridge V, 14, '31; Yonah Mt. VI, 10, '36 (2); Tray Mt. VI, 11, '36 (2); VI, 19, '36 (2).

9053—M. INSIPIENS Say. Sandersville V, 31, '31.

9058—M. MOROSUS Cand. Canton VII, 17, '31.

M. sp. Blairsville VI, 25, '31; Rome VI, 30, '31.

M. sp. Atlanta VII, 2, '31.

M. sp. Atlanta VI, 30, '30.

M. sp. Stone Mt. V, 10, '31; Atlanta VI, 20, '30; VII, 28, '29.

9071—CARDIOPHORUS CARDISCE Say. Sandersville V, 31, '31.

9082—C. CONVEXUS Say. Folkston V, 18, '32; Stone Mt. V, 26, '27.

9083—C. FLORIDAE Cand. Savannah IV, 11, '31.

9087—C. GAGATES Er. Brunswick IV, 12, '31; Yonah Mt. VI, 10, '36 (2); Tray Mt. VI, 19, 36 (2).

9114—HORISTONOTUS CURIATUS Say. Cornelia VI, 28, '31.

9117—H. UHLERI Horn. Rome VI, 30, '31.

MELASIDAE.

9135—DELTOMETOPUS AMOENICORNIS Say. Jonesboro VI, 26, '32.

9141—DROMAEOLUS STRIATUS Lec. Tate VI, 27, '32.

9157—MICRORHAGIA TRIANGULARIS Say. Jonesboro VI, 26, '32.

9166—NEMATODES ATROPOS Say. Jonesboro VI, 26, '32.

9179—ANELASTES DRURYI Kby. Toccoa VI, 16, '29; Atlanta VIII, 20, '34.

THROSCIDAE.

9182—DRAPETES GEMINATUS Say. Jonesboro VI, 26, '32.

9191—AULONOTHROSCUS PUNCTATUS Bonv. Calhoun VI, 28, '32.

9202—THROSCUS HORNI Bl. Augusta VI, 9, '32.

BUPRESTIDAE.

9208—POLYCESTA ANGULOSA Duv. Americus VI, 20, '31.

9247—ACMAEODERA ORNATA Fab. Atlanta IV, 23, '27; Blairsville V, 14, '31.

9272—A. PULCHELLA Hbst. Folkston V, 8, '33.

9286—A. TUBULUS Fab. Brunswick IV, 12, '31; Atlanta IV, 20, '27; Toccoa V, 14, '30; Stone Mt. VI, 9, '28 (2).

9291—PTOSIMA GIBBICOLLIS Say. Columbus V, 27, '31.

9316—CHALCOPHORA VIRGINIENSIS Drury. Stone Mt. IV, 2 to IX, 20 (13); Atlanta IV, 6 to VIII, 7 (6); Savannah IV, 11, '31; Kennesaw Mt. IV, 14, '36 (2); Eatonton IV, 22, '36; IV, 28, '36; V, 5, '36; V, 15, '36; Conyers V, 5, '36; Waycross V, 8, '33; Toccoa V, 14, '30; Dahlonega VI, 22, '32 (12); Cartersville, VII, 4, '34.

9319—C. GEORGIANA Lec. Stone Mt. V, 7, '32; Sparta V, 21, '36 (2).

9332—TRACHYKELE LECONTEI Gory. Dahlonega VI, 22, '32.

9333—DICERCA DIVARICATA Say. Hiawassee V, 28, '34.

9337—D. PUNCTULATA Schon. Stone Mt. IV, 28, '27.

9341—D. OBSCURA Fab. Stone Mt. IV, 24, '32; Madison VI, 8, '32; Cairo VI, 18, '31; Macon VII, 30, '31.

9342—D. LURIDA Fab. Atlanta VII, 12, '30; Stone Mt. VIII, 2, '29.

9343—D. LEPIDA Lec. Stone Mt. V, 7, '32.

9344—D. SPRETA Gory. Hiawassee V, 28, '34.

9365—BUPRESTIS STRIATA Fab. Okefenokee Swamp V, 7, '33; Folkston V, 7, '33; Ellijay VI, 27, '31.

9364—B. APRICANS Hbst. Stone Mt. IV, 17, '32 (2); IV, 21, 32; IV, 24, 32.

9365—B. DECORA Fab. Gainesville IV, 13, '27; Atlanta V, 6, '30.

9366—B. SALISBURYENSIS Hbst. Atlanta VII, 12, '30.

9367—B. LINEATA Fab. Atlanta VII, 16, '27.

9374—B. RUFIPES Oliv. Americus VI, 20, 31.

9377—B. FASCIATA Fab. Tray Mt. VII, 12, '35.

9386—MELANOPHILA OBTUSA Horn. Atlanta VII, 12, '30.

9389—M. NOTATA Cast. Atlanta VI, 1, '32.

9396—ANTHAXIA QUERCATA Fab. Stone Mt. V, 25, '28 (3); Toccoa VI, 16, '29.

9399—AGRILAXIA FLAVIMANA Gory. Clayton V, 28, '34.

9400—CHRYSOBOTHRIS CHRYSOELA Ill. Jesup V, 5, '30.

9401—C. SEXFASCIATA Schffr. Cairo VI, 19, '31.

9407—C. SCITULA Gory. Atlanta VI, 1, '27.

9448—C. PUSILLA Cast. Blairsville V, 14, '31.

9461—C. DENTIPES Germ. Savannah IV, 11, '31; Stone Mt. IV, 21, '32 to VI, 19, '32 (123); Okefenokee Swamp V, 7, '33 (48); Americus VI, 20, '31.

9464—C. FLORICOLA Gory. Okefenokee Swamp V, 6, '33 (5); Toccoa V, 14, '30.
9466—C. FEMORATA Oliv. Stone Mt. IV, 21, '32; VII, 20, '27; Cornelia V, 16, '28.
9479—C. HARRISI Hentz. Cornelia V, 16, '28.
9481—ACTENODES ACORNIS Say. Cornelia V, 16, '28.
9482—A. BELLULA Mann. Toccoa V, 14, '30.
9483—A. CALCARATA Chev. Waycross V, 15, '32.
9488—AGRILUS CONCINNUS Horn. Milledgeville V, 28, '31.
9498—A. ACUTIPENNIS Mann. Athens VI, 13, '32.
9502—A. FUSCIPENNIS Gory. Columbus V, 27, '31.
9513—A. RUFICOLLIS Fab. Dahlonega VI, 22, '32.
9520—A. EGENUS Gory. Hiawassee V, 28, '34.
9523—A. ARCUATUS Say. Hiawassee V, 28, '34.
9529—A. IMBELLIS Cr. Blue Ridge V, 14, '31.
9531—A. FALLAX Say. Cairo VI, 18, '31.
9539—A. OTIOSUS Say. Toccoa VI, 19, '29.
9565—PACHYSCHELUS SCHWARZI Kerr. Folkston V, 8, '33.
9567—P. OVATUS Say. Jasper VII, 17, '31.
9568—BRACHYS TESSELLATUS Fab. Cairo VI, 18, '31.
9572—B. AEROSUS Melsh. Baxley V, 6, '30.
9574—B. OVATUS Web. Jesup V, 6, '30.
9576—B. CUPRASCENS Blatch. Cairo VI, 18, '31.
9578—TAPHOCERUS GRACILIS Say. Hartwell VI, 13, '32.
9580—T. LAEVICOLLIS Lec. Toccoa VI, 16, '29.

A New Agaporus (Dytiscidae-Coleoptera).

By H. C. FALL, Tyngsboro, Massachusetts.

In the early summer of 1934 I received from Mr. C. A. Frost an example of an *Agaporus* purporting to be *conoideus*. Fortunately the specimen was a male, and though in superficial appearance it strongly resembled *conoideus*, on closer inspection it was found not to possess the secondary sexual characters of the latter species; in fact except for the more pointed form and darker thorax, in which respects it agreed closely with *conoideus*, the general characters were more nearly those of *difformis*. The following comparative description will enable the student to discriminate between the three species.

Agaporus latens, n. sp.

Size: intermediate between *conoideus* and *difformis*, being slightly larger than the former and a little smaller than the

latter. Dimensions of the type—length 5.3 mm.; width 2.4 mm.

Form and color nearly as in *conoideus*, the body in these two being more pointed behind, and the brownish piceous or blackish thorax contrasting more sharply with the paler head and elytral base than in *difformis*, in which, while the type of coloration is the same, the thorax is of a reddish brown tint little or not at all darker than the adjacent head and elytral base.

Punctuation of upper surface nearly as in *difformis*, the elytra more closely punctate than in *conoideus* and nearly or quite lacking the intermixed fine punctules of the latter species.

Sides of body beneath finely sparsely punctate, with oblique fine scratches both on the ventral segments and coxal plates, much as in *difformis;* in *conoideus* the oblique scratches are lacking on the coxal plates, which are more numerously and distinctly punctate than in the other two species. Prosternal process somewhat less dilated posteriorly than in *difformis* and with the reflexed edges and median line less elevated. In *conoideus* the prosternal process is more broadly convex medially and the lateral edges scarcely elevated.

Femora of male not fimbriate posteriorly. In *difformis* the hind femora, and in *conoideus* both middle and hind femora of male are fimbriate. Anterior protarsal claw of male gradually dilated beneath for two-thirds its length but not appreciably contorted. In *difformis* the anterior claw is dilated and somewhat contorted; in *conoideus* the anterior claw is not dilated but is acutely toothed beneath.

Length 5.2 to 5.6 mm.; width 2.3 to 2.6 mm.

Described from six examples from the following localities: 1 ♂, vicinity of Dover, NEW HAMPSHIRE, IX, 28, '32; 2 ♂s Sherborn, MASSACHUSETTS, VI, 18, '34 (Frost); 2 ♂s, 1 ♀ Peekskill, NEW YORK, VI, 26, '90 (J. D. Sherman).

The type is one of the Sherborn males, now in the writer's collection, and is one of a small series taken by Mr. Frost in a small temporary pool in the woods. An attempt to secure further specimens a week or two later, Mr. Frost writes, was unsuccessful, the water having become much warmer and partially dried up from evaporation. The Peekskill specimens were obtained from friend Sherman very many years ago in one of my first exchanges. They with others were all supposed to be *difformis* and he seemed to be the only source of supply of

this rare species. It now turns out that of my series of eight Peekskill speciments of *differmis*, five are really that species and three are *latens*. The same date of capture (VI, 26, '90) occurs in both series. It is interesting to remark that Mr. Sherman also took his specimens from woodland pools.

New Colorado Asilidae (Diptera).

By MAURICE T. JAMES, Colorado State College,
Fort Collins, Colorado.

Heteropogon maculinervis, new species.

Related to *currani* Pritchard, to which it readily traces in Pritchard's key; but its general form is more robust, the cross-veins are more heavily infumated, and the scutellum lacks marginal bristles; in the male, the upper part of the mystax and the pile around the base of the antennae are white, in contrast to the heavier black bristles of the mystax, and the brush of the middle tibia is black, dense, and with a corresponding tuft of black hairs opposite it on the femur.

♀. Head and appendages black, whitish-pilose, the heavier bristles of the mystax black, those of the vertex, occiput, and antennae variably whitish to black; the integument obscured by a yellowish bloom.

Thorax black, whitish-pilose and yellowish to brownish pruinose; in well-preserved specimens the brown pruinosity forms two narrowly-divided dorsal stripes which expand before and behind the suture to cover most of the dorsum; bristles mostly black; coxae, trochanters and femora black, tibiae and tarsi reddish, the latter darkened apically; bristles of tibiae mostly whitish, some on the anterior tibiae above black; those of the tarsi mostly black.

Abdomen black, with bluish reflections above, clothed with sparse microscopic whitish pile above and conspicuous whitish tufts laterally; segments one to four with small posterior triangles of whitish pollen; the remaining segments may have the integument reddish laterally; venter variably yellowish to black. Wings smoky hyaline, more so apically; the cross-veins heavily clouded with brown. Length, 11-12 mm.

♂. Differs only sexually and as above indicated; the genitalia are strong and for the most part, red.

Holotype: ♀, Masonville, COLORADO. September 4, 1934 (M. T. James). *Allotype:* ♂. Same data. *Paratypes:* 3♀, same data; 1♂, 5♀, Huerfano County, Colorado, 6000 feet, August 14, 1928 (R. H. Painter); 2♂, Bozeman, MONTANA, August 13, 1931 (R. H. Beamer, L. D. Anderson); 1♂, Payson Canyon, UTAH (Ruth Holbrook); 1♀, Thurley Ranch, La Sal, Mountains, Utah, 6500 feet (Vasco M. Tanner); 1♀, Eagle, Colorado, August 24, 1935 (C. J. Sorenson) on *Chrysothamnus.*

LEPTOGASTER Meig. Four species of *Leptogaster* Meig, all taken from localities west of the Mississippi and east of the Rockies, agree in having the antenna predominantly (that is, entirely, or with the exception of the second segment), black; these differ from the eastern species known to me, all of which have at least the two basal antennal segments reddish, yellowish, or pale fuscous. The following key will separate these species.

1. Antennae wholly black 2
   Second antennal segment red 3
2. Middle and hind tibiae and femora conspicuously marked with black; pruinosity of thoracic dorsum and pleura almost concolorous .....*arenicolus* n. sp.
   Only the posterior tibiae and femora marked with black; dorsum brown-pruinose, pleura white-pruinose, *murinus* Lw.
3. Legs yellow or reddish.....*coloradensis* n. sp.
   All femora and tibiae conspicuously marked with black, *eudicranus* Lw.

L. EUDICRANUS Lw. Described from Alamogordo, New Mexico. I have COLORADO specimens from Boulder, July 22, 1933 (James), Ft. Collins, July 10, 1935, (James) and Hamilton, July 3, 1928, (S. C. McCampbell).

Leptogaster arenicolus, new species.

♀. Head, including proboscis and antennae, wholly black, the mystax, bristles, pile and pruinosity white.

Thorax black; the pleura, humeri, and supra-alar regions considerably reddish; pruinosity of the pleura white, that of the dorsum pale yellow, almost white; all bristles and hairs white.

Abdomen black, white-pilose; the pruinosity gray and moderately sparse dorsally, brownish and denser laterally, and densely white ventrally; no pale interruptions in the ground color.

All coxae reddish, somewhat paler basally; tarsi, except for the yellow basitarsi, black; anterior femora and tibia pale yellow, narrowly reddish or pale brownish above; the middle tibiae brown above, except basally, their femora brown below, black above, except basally and apically; the posterior femora strongly clavate, the tibiae less so, both segments brownish to black, darker above, except for the constricted basal portions of both segments and the extreme apices of the femora, which are pale yellow. Wings hyaline, vein M_2 not angularly bent. Length, 10 mm.

Holotype: ♀, North of Eads, COLORADO, July 29, 1933 (H. G. Rodeck and M. T. James). University of Colorado Collection. *Paratype:* ♀, same data. Colorado State College Collection.

Taken resting on the bare sand in a wind-blown area one mile north of Eads.

Leptogaster coloradensis, new species.

♀. Head black in ground color; the face and especially the oral margin white-pollinose. Mystax white, rather sparse. First and third antennal segments, including style, black, the second red.

Thorax black; brownish-pollinose dorsally, white pollinose laterally; bristles black. Abdomen uniformly black, white- pollinose, and with sparse white pile.

Legs yellow; the tarsi darkened, the apices of the tarsomeres black, the fifth segments of all tarsi, and all the segments of the posterior tarsi, almost wholly black; posterior tibiae darkened toward the apex, black at extreme apex; bristles and pile of legs concolorous with background. Halteres yellow, knobs black. Wings hyaline; vein M_2 variable, angularly bent or not so. Length, 10 mm.

♂. Hind femora more strongly clavate than in the female, and with the constricted basal portion lemon-yellow. Otherwise as in the female.

Holotype: ♀, 6 miles north of Boulder, COLORADO. June 22, 1933 (M. T. and Helen B. James). *Allotype:* ♂, same data. *Paratypes:* ♀, same data, ♀ Boulder, Colorado. June 5, 1932 (M. T. James), ♀, Hamilton, Colorado, July 3, 1928 (S. C. McCampbell).

The Boulder specimens were taken in areas of close grassland adjacent to the foothills.

The types of the species here described as new are in the author's collection, unless stated otherwise.

Notes on Coleoptera with Descriptions of New Species (Buprestidae and Cerambycidae).

By Josef N. Knull, Ohio State University, Columbus, Ohio.

Buprestidae.

Polycesta elata Lec. Dead and dying oaks in Gillespie County, Texas, are heavily infested by this species. The larvae are heart-wood feeders and the adults leave large holes in the trunks where they emerge. "Cat faces" on living trees frequently contain these exit holes.

Acmaedera sabinae, n. sp.

Form and markings similar to those of *A. conoidea* Fall, only smaller; head, pronotum and ventral surface bronzy, shining, elytra piceous, with two irregular yellow stripes on each elytron, one near suture and the other along costa, stripes jointed back of humerus and interrupted at middle.

♂ Head convex; surface reticulate, moderately pubescent; antennae reaching slightly beyond hind angles of pronotum when laid along lateral margins, serrate from the fifth joint.

Pronotum wider than long, widest in the middle; sides broadly rounded; surface densely punctate, punctures separated by their own diameter in middle, closer and more numerous laterally, moderately pubescent, pubescence along sides consisting of plumose hairs. Scutellum not evident.

Elytra at the widest part wider than base of pronotum; sides sinuate back of base, nearly parallel on basal two-thirds, serrate on apical third; disk convex; surface with rows of closely-set punctures which are larger at base, interspaces with single rows of fine punctures; a short recumbent hair arises from each fine puncture.

Abdomen beneath closely, finely punctate; last ventral segment broadly rounded, with a slight indication of a subapical carina. Front margin of prosternum straight, not retracted at sides. Entire ventral surface clothed with white plumose hairs which are replaced by recumbent hairs in central portion of first four abdominal segments.

Length 4 mm.; width 1 mm.

Described from three specimens collected by the writer on the blossoms of mesquite (*Prosopis juliflora* D. C.) in Sabina Canyon, near Tucson, ARIZONA, June 11, 1935. Holotype and paratypes in writer's collection.

According to Fall's [1] key this species would run to *A. conoidea* Fall; however, the vestiture of the ventral surface together with the non-retracted anterior margin of the prosternum will separate the two species. Prof. Fall has kindly compared a specimen with those of *A. conoidea* Fall.

Psiloptera riograndei, n. sp.

Form oblong, moderately convex blackish-bronze on both surfaces, most of the punctures on head, pronotum and elytra cupreous.

♂—Head convex, slight median depression; surface confluently punctate, irregular callosities in middle, moderately pubescent; antennae reaching to middle of pronotum when laid along side margins, serrate starting with the third joint, second joint longer than wide, third joint at least twice the length of second, fourth joint shorter than third, joints four to eleven inclusive gradually diminishing in length, last joint without a terminal process in either sex.

Pronotum wider than long, widest at base; sides broadly arcuate from base to apex; disk convex, a slight indication of median depression on anterior half and one in front of scutellum, also one each side at base; surface coarsely punctured, punctures becoming smaller and more numerous toward sides, irregular raised smooth areas in central portion, pubescense sparse, confined to sides. Scutellum round, smooth.

Elytra wider than pronotum at base; sides nearly parallel on basal two-thirds, broadly rounded on apical third, apices emarginate; disk convex; surface irregularly punctate, irregular smooth areas forming indistinct costae.

Body beneath coarsely confluently punctate, prosternum deeply striate on each side; first abdominal segment longitudinally excavated at middle. Last abdominal segment truncate.

Length 16 mm.; width 5 mm.

♀—Differs from the male by being slightly larger, more convex beneath, pubescence of ventral surface not as long.

Described from a small series of both sexes collected along the Pecos River and Devil's River, TEXAS, on May 23, 1935, by the writer. Male holotype, allotype and paratypes in author's collection.

[1] H. C. Fall, Jour. N. Y. Ent. Soc., v. 7, pp. 1-37, 1899.

This species somewhat resembles *P. cupreopunctata* Schffr. Mr. W. S. Fisher kindly compared a specimen with the cotypes in the National Museum collection. He states that *P. cupreopunctata* Schffr. differs by being more convex above, in having the pronotum widest near the middle, the elytra longitudinally costate, punctures much coarser and less arranged in longitudinal rows, especially toward the sutural margins, the prosternal process between the anterior coxae narrower and more deeply grooved on each side.

(To be continued.)

Balloon Drift and Insect Drift.

Beetles closely related to the introduced European elm bark beetle, the principal carrier of the Dutch elm disease, have been taken in airplane traps at a height of half a mile and this, in connection with the well known autumn drift of hundreds of miles of the cotton moth as well as some other insects, establishes a probability that elm bark beetles may be carried long distances and possibly infect elms remote from areas where the Dutch elm disease occurs. It is not feasible to follow small insects in upper air currents. It is possible to gain an idea of what may occur by liberating small balloons bearing numbered tags. The Bartlett Tree Research Laboratories are releasing, over a period of two months, 5,000 balloons for the purpose of getting additional data on wind drift from localities within the area where Dutch elm disease occurs.

This balloon program is an extension of work with the New York State Conservation Commission from 1923-25 inclusive. During that period nearly 20,000 balloons were released and 1260 tags returned, a recovery of approximately 6%. The balloons were released from a total of 21 stations ranging from Canaan, Conn., and Millbrook, New York, along the Connecticut and Hudson valleys, approximately to the international boundary. Although all these balloons were liberated from points in eastern New York or western New England, only 11% were returned from points in New York state and 84% from the New England states. There were received in addition 20 tags from Nova Scotia, five from New Brunswick and one from Newfoundland, this last was found approximately 775 miles from the point of release.

The finders of balloons are requested to fill in the blanks and mail the tags without undue delay.—E. P. Felt, Bartlett Tree Research Laboratories, Stamford, Connecticut.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JANUARY, 1937.

In the NEWS for February, 1936, pages 43 and 44, we published a statement of our receipts and expenditures for 1935, showing a deficit of $219.15. We also made an appeal for additional subscribers to help overcome this loss and to keep the journal going. Some additional subscriptions have been the result of the efforts of kind supporters of recent years and other friends have generously given direct financial help. To all of these we give our hearty thanks.

Our standing at the end of 1936 is approximately as follows:

Financial Statement of Entomological News, Dec. 31, 1936

Receipts Estimated

Subscriptions (378 October report)	$1088.00
Advertisements	126.09
Sales	36.43
Donations	67.50
Total	$1318.02

Expenditures to November 30th

Printing Numbers 1-9	$1054.20
Corrections	52.00
Postage	38.08
Supplies (Envelopes, $25.80; Misc. Exp., $25.86)	51.66
	$1195.94
December Number 10, including index, estimated	175.00
Total	$1370.94

We have taken the number of subscriptions as of October, 1936, as most nearly representing our condition for the year, for some subscriptions do not begin with the volume in January, but run for twelve months from other starting dates. So estimated, the total number is twenty-five more than in 1935; we had hoped for an increase of seventy-three to wipe out the 1935 deficit.

We have omitted the costs of, and the contributions toward, illustrations and extra pages, as these nearly balance.

As stated above the deficit for 1935 was $219.15, that for 1936 $52.92, a total for the two years of $272.07.

The deficit for 1936 shows an encouraging decrease, largely due to donations of $67.50. We can hardly count, however, on such generosity in making up an annual budget. We are, therefore, putting into effect, with the present January number, some economies which, we hope, will not seriously detract from the appearance of the NEWS and will surely not lessen its usefulness.

The familiar pink covers, of forty-seven years, give way to white paper of the same weight and quality as the reading pages within. A change to a cheaper method of binding also is thereby rendered possible. An illustration on the front cover disappears. We shall continue to furnish twenty-five free copies of their articles to authors, but these will be "run of form," that is, without removal of the conclusion of the preceding article or of the beginning of the succeeding article in cases where conclusion and beginning fall on the first and last pages of the article in question. These free separates will be unbound, uncut and without covers.

Of course those who wish separates with the extraneous matter removed, bound and trimmed and with printed covers can obtain them by ordering them when returning proof, at the prices indicated at the bottom of the second page of the cover.

As an offset to these reductions our printing contract for 1937 calls for 30 pages of reading matter as against 28 in 1936. This will increase, even though slightly, promptness of publication.

These decreases in estimated costs will not permit many improvements in the ability of the NEWS to meet the demands of its clientele, and we renew our appeal of last year for additional subscribers.

New List of Titles of Publications Referred to by Numbers in Entomological Literature in Entomological News.

1. Transactions of The American Entomological Society. Philadelphia.
2. Entomologische Blätter, red. v. H. Eckstein etc. Berlin.
3. Annales Sci. Naturelles, Zoologie, Paris.
4. Canadian Entomologist. London, Canada.
5. Pysche, A Journal of Entomology. Boston, Mass.
6. Journal of the New York Entomological Society. New York.
7. Annals of the Entomological Society of America. Columbus, Ohio.
8. Entomologists' Monthly Magazine. London.
9. The Entomologist. London.
10. Proceedings of the Ent. Soc. of Washington. Washington, D. C.
11. Deutsche entomologische Zeitschrift. Berlin.
12. Journal of Economic Entomology, Geneva, N. Y.
13. Journal of Entomology and Zoology. Claremont, Cal.
14. Archivos do Instituto Biologico, Sao Paulo.
15. Annales Academia Brasileira de Sciencias. Rio de Janeiro.
17. Entomologische Rundschau. Stuttgart, Germany.
18. Internationale entomologische Zeitschrift. Guben, Germany.
19. Bulletin of the Brooklyn Entomological Society. Brooklyn, N. Y.
20. Societas entomologica. Stuttgart, Germany.
21. The Entomologists' Record and Journal of Variation. London.
22. Bulletin of Entomological Research. London.
23. Bollettino del Lab. di Zool. gen. e agraria della Portici. Italy.
24. Annales de la société entomologique de France. Paris.
25. Bulletin de la société entomologique de France. Paris.
26. Entomologischer Anzeiger, hersg. Adolf Hoffmann. Wien, Austria.
27. Bolletino della Societa Entomologica Italiana. Genova.
28. Ent. Tidskrift utgifen af Ent. Föreningen i Stockholm. Sweden.
29. Annual Report of the Ent. Society of Ontario. Toronto, Canada.
30. Archivos do Instituto de Biologia Vegetal. R. d. Janeiro.
31. Nature. London.
32. Boletim do Museu Nacional do Rio de Janiero. Brazil.
33. Bull. et Annales de la Société entomologique de Belgique. Bruxelles.
34. Zoologischer Anzeiger, hrsg. v. E. Korschelt. Leipzig.
35. The Annals of Applied Biology. Cambridge, England.
36. Trans. Royal Entomological Society, London. England.
37. Proceedings of the Hawaiian Entomological Society. Honolulu.
38. Bull. of the Southern California Academy of Sciences. Los Angeles.
39. The Florida Entomologist. Gainesville, Fla.
40. American Museum Novitates. New York.
41. Mitteilungen der schweiz. ent. Gesellschaft. Schaffhausen, Switzerland.
42. The Journal of Experimental Zoology. Philadelphia.
43. Ohio Journal of Sciences. Columbus, Ohio.
44. Revista chileña de historia natural. Valparaiso, Chile.
45. Zeitschrift für wissenschaftliche Insektenbiologie. Berlin.
46. Zeitschrift für Morphologie und Ökologie der Tiere. Berlin.
47. Journal of Agricultural Research. Washington, D. C.
48. Wiener entomologische Zeitung. Wien, Austria.
49. Entomologische Mitteilungen. Berlin.
50. Proceedings of the U. S. National Museum. Washington, D. C.
51. Notulae entomologicae, ed. Soc. ent. Helsingfors. Helsingfors, Finland.
52. Archiv für Naturgeschichte. hrsg. v. E. Strand. Berlin.
53. Quarterly Journal of Microscopical Science. London.
54. Annales de Parasitologie Humaine et Compareé. Paris.
55. Pan-Pacific Entomologist. San Francisco, Cal.

56. "Konowia". Zeit. für systematische Insektenkunde. Wien, Austria.
57. La Feuille des Naturalistes. Paris.
58. Entomologische Berichten. Nederlandsche ent. Ver. Amsterdam.
59. Encyclopédie entomologique, ed. P. Lechevalier. Paris.
60. Stettiner entomologische Zeitung. Stettin, Germany.
61. Proceedings of the California Academy of Sciences. San Francisco.
62. Bulletin of the American Museum of Natural History. New York.
63. Deutsche entomologische Zeitschrift "Iris". Dresden.
64. Zeitschrift des österr. entomologen-Vereines. Wien.
65. Zeitschrift für angewandte Entomologie, hrsg. K. Escherich. Berlin.
66. Report of the Proceedings of the Entomological Meeting. Pusa, India.
67. University of California Publications, Entomology. Berkeley, Cal.
68. Science. New York.
69. Physis. Revista Soc. Argentina Cien. Nat. Buenos Aires.
70. Entomologica Americana, Brooklyn Entomological Society. Brooklyn.
71. Novitates Zoologicae. Tring, England.
72. Revue russe d'Entomologie. Leningrad, USSR.
73. Mem. Instituto Butantan. Sao Paulo, Brazil.
74. Sbornik entomolog. národniho musea v Praze. Prague, Czechoslavokia.
75. Annals and Magazine of Natural History. London.
77. Comptes rendus heb. des séances et mémo. de la soc. de biologie. Paris.
78. Bulletin Biologique de la France et de la Belgique. Paris.
79. Koleopterologische Rundschau. Wien.
80. Lepidopterologische Rundschau, hrsg. Adolf Hoffmann. Wien.
82. Bulletin, Division of the Natural History Survey. Urbana, Illinois.
83. Arkiv för zoologie, K. Svenska Vetenskapsakademien i. Stockholm.
84. Ecology. Brooklyn.
85. Genetics. Princeton, New Jersey.
87. Archiv für Entwicklungs mechanik der Organ., hrsg. v. Roux. Leipzig.
88. Die Naturwissenschaften, hrsg. A. Berliner. Berlin.
89. Zoologische Jahrbücher, hrsg. v. Spengel. Jena, Germany.
90. The American Naturalist. Garrison-on-Hudson, New York.
91. Journal of the Washington Academy of Sciences. Washington, D. C.
92. Biological Bulletin. Wood's Hole, Massachusetts.
93. Proceedings of the Zoological Society of London. England.
94. Zeitschrift für wissenschaftliche Zoologie. Leipzig.
95. Proceedings of the Biological Soc. of Washington, Washington, D. C.
97. Biologisches Zentralblatt. Leipzig.
98. Le Naturaliste Canadien. Cap Rouge, Chicoutimi, Quebec.
99. Mélanges exotico-entomologiques, Par Maurice Pic. Moulins, France.
100. Bulletin Intern., Acad. Polonaise Sci. et Lett. Cracovie.
101. Tijdschrift voor entomologie. Nederland. Ent. Ver., Amsterdam.
102. Entomologiske Meddelelser, Entomologisk Forening, Copenhagen.
103. Journal of the Kansas Entomological Society, Lawrence, Kansas.
104. Revista de la Sociedad entomologica Argentina, Buenos Aires.
105. Revista Entomologia, Sao Paulo, Brazil.
106. Anales Sociedad Cientifica Argentina, Buenos Aires.
107. Proc., Royal Entomological Society, London.
108. Revista, Col. Nac. Vicente Rocafuerte, Guayaquil.
109. Arbeiten uber morpholog. und taxonom. ent. aus Berlin-Dahlem.
110. Arbeiten ueber physiolog. u. angewandte ent. aus Berlin-Dahlem.
111. Memorias do Instituto Oswaldo Cruz. Rio de Janeiro.
112. Anales del Instituto de Biologia Mexico.
113. Entomologische Beihefte aus Berlin Dahlem.
114. Occasional Papers of the Museum of Zoology, University of Michigan.
115. Memorias de la Soc. Cubana de Hist. Nat. Havana, Cuba.
116. Parasitology. Ed. Keilin and Hindle. London.

Termite Nests—a study of the Phylogeny of Behavior.

Under this title is published in *Science*, for January 8, 1937, an abstract of a paper presented by A. E. Emerson at the recent Chicago meeting of the United States National Academy of Sciences. From it we take the following: Wood-eating roaches, similar to the hypothetical ancestor of the termites, excavate galleries in wood but make no constructions. The Kalotermitidate excavate wood and construct partitions indicating responses to humidity and mechanical or chemical factors. The Mastotermitidae exhibit a quantitative advance in nest construction compared to the Kalotermitidae. The Hodotermitidae show a further advance with subterranean nests, elaborate carton construction and food storage. The Rhinotermitidae have separately evolved subterranean adjustment and in some species show building activities in response to social factors as well as physical factors. Excavated subterranean nests of the Termitidae exhibit the influence of mechanical and spatial factors. Materials may be dirt, wood or excrement, cemented by saliva or excretions. Structures consist of covered tunnels, roads, rain-shedding projections and ridges, nests of characteristic size and differentiation, ventilation pores in the walls, stored food and fungus gardens. Sterile workers and nymphs of sterile soldiers and workers construct the nests in the Rhinotermitidae and Termitidae.

Entomological Literature

COMPILED BY V. S. L. PATE, LAURA S. MACKEY and E. T. CRESSON, Jr.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual volume, and in some cases the part, heft, &c. the latter within ( ) follows; then the pagination follows the colon :

All continued papers, with few exceptions, are recorded only at their first installments.

(*) Papers containing new forms or names not so stated in titles, have an * within parentheses thus (*) following the pagination of reference to paper.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. Titles of papers containing new forms or new names will be indicated by an asterisk within parentheses at end of reference, (*).

Papers published in the Entomological News are not listed.

GENERAL.—Ancona, H.—Contribuciones, etc. II. Insectos de los manantiales g. aguas estancodas de la region de Actopan, Hgo. [112] 1936: 265-267. **Doane, Van Dyke, Chamberlin & Burke.**—Forest Insects. A Textbook for the use of students in forest school, colleges, and universities, and for forest workers. New York, McGraw-Hill Book Co., 1936. xii + 463 pp., ill. **Imms, A. D.**—The ancestry of insects. [Trans. Soc. Brit. Ent.] 3: 1-32, ill. **Lemche, H.**—The primitive colour pattern on the wings of insects and its relation to the venation. Preliminary notice. [Vedenskab. Meddel.] 99: 45-64, ill.

ANATOMY, PHYSIOLOGY, ETC.—Andre, M.—Sur le Pediculoides ventricosus (Acarina). [Bull. Mus. Nat. Hist. Nat., Paris] 8: 337-341, ill. **Baus, A.**—Die Reduktion der Flugel und Flugelsinneskuffeln bei Lepidopteren. [46] 32: 1-46, ill. **Berretta, L.**—Genese della membrana peritrofica nell intestino degli ortotteri. [Bull. Ist. z. Univ. Palermo] 13: 117-132, ill. **Boving, A. G.**—Description of the larva of Plectris aliena (Scarab.) and explanation of new terms applied to the epipharynx and raster. [10] 38: 169-185, ill. **Carleton, M.**—The anatomy and histology of the alimentary canal of the adult Nebria brevicollis (Coleo: Carabidae). [Trans. Soc. Brit. Ent.] 3: 119-128, ill. **Cook, J. H.**—A contribution towards a study of Calosoma inquisitor (Carabidae, Col.). [Trans. Soc. Brit. Ent.] 3: 79-118, ill. **Eltringham, H.**—On the eyes of tsetse flies. [36] 85: 281-285. ill. **Everly, R. T.**—The alimentary tract of the margined blister beetle, Epicauta cinerea marginata. [43] 36: 204-216, ill. **Garbowski, T.**—Von der Wiederholbarkeit einmaliger instinktiver Handlungen (Auf Grund von Versuchen mit der Verpuppung der Gabelschwanze). [100] B, 2: 319-348, ill. **Glasgow, J. P.**—Internal anatomy of a caddis fly, Hydropsyche colonica. [53] 79: 151-179, ill. **Gurney, A. B.**—The external morphology and phylogenetic position of the woodland cave cricket (Ceuthophilus brevipes, Orthop.: Tettigoniidae). [6] 44: 281-316, ill. **Hallock, H. C**—Recent developments in the use of electric light traps to catch the Asiatic garden beetle. [6] 44: 261-279, ill. **Hinton, H. E.**—Notes on the biology of Dryops luridus (Coleo: Dryopidae). [Trans. Soc. Brit. Ent.] 3: 67-78, ill. **Ide, F. P.**—The significance of the outgrowths on the prothorax of Ecdyonurus venosus (Ephemeroptera). [4] 68:

234-238, ill. **Jawlowski, H.**—Uber den Gehirnbau der Kafer. [46] 32: 67-91, ill. **Koch, A.**—Die Symbiose des Splintkafers, Lictus linearis. [46] 32: 92-136, ill. **Koch, A.**—Experimentelle Untersuchungen an Oryzaephilus surinamensis (Cucuj.). [46] 32: 137-180, ill. **Lemche, H.**—The primitive colour-pattern on the wings of insects and its relation to the venation. [Vidensk. Medd. Dansk Naturhist. Foren., Copenhagen] 99: 45-64, ill. **Liche, H.**—Beitrage zur Ethologie der Dermestiden (Coleo.). [100] B, 2: 141-162, ill. **Mellanby, H.**—The later embryology of Rhodnius prolixus (Hemiptera). [53] 79: 1-42, ill. **Mikulski, J. S.**—The effect of constant and alternating temperatures on the survival of some developmental stages of Tribolium confusum. On the changes of developmental velocity of some developmental stages of Tribolium confusum (Coleo: Tenebrionidae) when influenced by constant temperature changes. [100] B, 2: 361-372; 373-385. **Newell & Baxter.**—On the nature of the free cell-border of certain mid-gut epithelia. [53] 79: 123-150, ill. **Opoczynska-Sembratowa, Z.**—Recherches sur l'anatomie et l'innervation du coeur de Carausius morosus (Orth: Phasmidae). [100] B, 2: 411-436, ill. **Painter, R. H.**—The food of insects and its relation to resistance of plants to insect attacks. [90] 70: 547-566. **Riley, W. A.**—Caustic potash preparations of insects and insect parts. [Tr. Am. Micro. Soc.] 55: 510-512. **Smith, C. L.**—The relation between the degree of fineness of pyrethrum powder produced by different periods of grinding to toxicity of insects and to deterioration by light and air. [6] 44: 317-339, ill. **Ting, P. C.**—The mouth parts of the Coleopterous group Rhynchophora. [Micro-ent.] 1: 93-114, ill. **Tischler, W.**—Ein Beitrag zum Formen-sehen der Insekten. [89] Abt. All. Zool., 57: 157-202, ill. **Zacwilichowski, J.**—Uber die innervation und die Sinnesorgane der Flugel von Aphrophora alni (Homoptera: Cercopidae). Uber die Afterfruhlingsfliege Isopteryx tripunctata (Plecoptera). [100] B, 2: 85-100; 267-284, ill. **Wigglesworth, V. B.**—The function of the corpus allatum in the growth and reproduction of Rhodnius prolixus (Hemiptera). [53] 79: 91-121, ill. **Williams, C. B.**—The influence of moonlight on the activity of certain nocturnal insects, particularly of the family Noctuidae, as indicated by a light trap. [Phil. Trans. R. Soc. London] (B), 226: 357-389, ill. **Wundrig, G.**—Die Sehorgane der Mallophagen, nebst vergleichenden Untersuch-

ungen an Liposceliden und Anopluren. [89] Abt. Anat., 62: 45-110, ill.

ARACHNIDA AND MYRIOPODA.—Chickering, A. M.—Additions to the list of known sps. of spiders from Barro Colorado Island, Panama. [Trans. Amer. Micr. Soc.] 55: 449-456. **Jacot, A. P.**—Two unrecorded spp. of Scutacaridae from the southern Appalachians. [4] 68: 225-229, ill. (*). **Locket, G. H.**—Regeneration in Arachnida. [31] 138: 885-886. **Lowrie, D. C.**—New localities for the black-widow spider. [68] 84: 437. **Palmer, E. L.**—Spiders and their kin. [Cornell Rur. Sch. Leafl.] 30, no. 2, 32 pp., ill.

THE SMALLER ORDERS OF INSECTS.—da Fonseca, F.—Sobre o macho de Tunga travassosi, e o parasitismo de Euphractes sexcinctus por Tunga penetrans. (Siphonap.). [105] 6: 421-424, ill. **Hood, J. D.**—Studies in Neotropical Thysanoptera, II. [105] 6: 424-460, ill. (*). **Priesner, H.**—Ueber einige neue und wenig bekannte Thysanopteren. [107] (B) 5: 208-214. **Tillyard, R. J.**—Kansas Permian Insects. Pt. 16. The Order Plecoptera: The fam. Doteridae, with a note on the affinities of the order Protohymenoptera. [Amer. Journ. Sci.] 32: 435-453, ill. (*).

ORTHOPTERA.—Caudell & Allard.—An undescribed var. of the wingless grasshopper Podisma glacialia v. amplicerca n. var. [10] 38: 147-148, ill. **Hayes, C.**—The common stick insect. [31] 138: 886. **Hubbell, T. H.**—A monographic revision of the genus Ceuthophilus (Gryllacrididae, Rhaplidophorinae). [Univ. Fla. Publ. Biol. Sci.] 2: 551 pp., ill. **Jules, F.**—La mante Paratenodera sinensis dans le Quebec. [98] 63: 240. **Slifer & King.**—An internal structure in the Cyrtacanthacrinae (Acrid.) of possible taxonomic value. [6] 44: 345-348. **Uvarov, B. P.**—Locusts as an international problem. [Current Sci.] 5: 191-193. **Zeuner, F. E.**—The recent and fossil Tympanophorinae (Tettigon.). [36] 85: 287-302, ill.

HEMIPTERA.—Caldwell, J. S.—Seven n. spp. of the gen. Aphalara (Cherm.). [43] 36: 220-224, ill. **DeLong, D. W.**—Some n. gen. of leafhoppers related to Thamnotettix (Cicadell.). [43] 36: 217-219. **DeLong & Davidson.**—Further studies of the gen. Empoasca (Cicadel.). IV. Eleven n. spp. of Empoasca from the U. S. [43] 36: 225-230, ill. **Gottfried, I.**—Note on the song of the periodical

cicada. [10] 38: 166. **Knowlton & Smith.**—Capitophorus Aphids infesting Artemisia. [4] 68: 229-234, ill. (*). **Mendes, D.**—Uma n. sp. do gen. Tachardiella (Coccidae). [105] 6: 374-376, ill. **Oman, P. W.**—Distributional and synonymical notes on the beet leafhopper, Eutettix tenellus (Cicadel.). [10] 38: 164-165. **Oman, P. W.**—South American leafhoppers of the genus Xerophloea (Cicadell.). [105] 6: 394-401, ill. (*). **Sim, R. J.**—Five lace-bug spp. not previously reported from New Jersey (Tingit.). [6] 44: 280.

LEPIDOPTERA.—Biedermann, R.—Note sur trois Erycinides d'Amerique du Sud. [25] 41: 252-260, ill. (*). **Bourquin, F.**—Notas biologicas sobre Cecidipta excoecariae (Pyral.). [105] 6: 384-388, ill. **Hoffmann, C.C.**—Contribuciones al conocimiento de la fauna de Actopan, Hgo, I. Algunas observaciones sobre la fauna de Lepidopteros en la epoca sica. [112] 1936: 259-263. **McDunnough, J.**—A critical review of the treatment of North American Parnassius species by Felix Bryk in Das Tierreich. [4] 68: 216-225. **Murray, D. T.**—South African Butterflies. A monograph of the family Lycaenidae. London, John Bale, Sons & Danielsson, 1935. viii + 195 pp., ill. **Richards, A. G.**—A generic synopsis of the Phoberia-Melipotis Drasteria-Boryza series of Erebinae (Noct.). [105] 6: 338-374, ill. (*). **Sim, R. J.**—Hesperid larva defoliating kudzu vine. [6] 44: 316. **Warren, B. C. S.**—Monograph of the genus Erebia. British Museum, London. 407 pp., ill.

DIPTERA.—Bonen, P.—The larval stages of Scatopse. [Vedenskab. Meddel.] 99: 33-43, ill. **Dozier, H. L.**—Observations on breeding places and winter activities of mosquitoes in the vicinity of New Orleans, La. [10] 38: 148-155, ill. **da Fonseca, F.**—Flebotomus das cercanias da cicade de S. Paulo, com a descripcao de Flebotomus arthuri e alphabeticus (Psych.). [105] 6: 323-327, ill. (S*). **Hering, M.**—Neue sudamerikanische Trypanea-Arten (Trypet.). [105] 6: 327-332, ill. **Hopkins, G. H. E.**—Mosquitoes of the Ethiopian Region. I.—Larval bionomics of mosquitoes and taxonomy of Culicine larvae. London, British Museum, 1936. 250 pp., ill. **Hull, F. M.**—A curious new syrphid fly from Peru. [10] 38: 167-168. **James, M. T.**—N. spp. and records of Colorado Diptera. [6] 44: 341-344.

Komp, W. H. W. A.—(Anopheles) chiriquiensis, a n. sp. from Panama. [10] 38: 156-160, ill. Anopheles (Nyssorhynchus) anomalophyllus, a n. sp. from Panama and Costa Rica. [10] 38: 156-160; 160-164, ill. **Lopes, H. de Sousa.**—Sobre tres especies novas de Richardiidae do Brasil. [105] 6: 475-480, ill. **Sturtevant & Dobzhansky.**—Observations on the spp. related to new forms of Drosophila affinis, with descriptions of seven. [90] 70: 574-584, ill. (*). **Townsend, C. H. T.**—On Cochliomyia hominivorax. Notes on Aldrich's 1926 species of Cylindromyia. A new Phasiine parasite of Dysdercus (Tachin.) [105] 6: 485-487; 488; 489 (S*). **Twin, C. R.**—The blackflies of eastern Canada (Simuliidae) Part II. [Canadian Jour. Res.] 14: 131-150, ill. (*).

COLEOPTERA.—Blackwelder, R. E.—Revision of the North American beetles of the Staphylinid subfamily Tachyporinae - Pt. 1: Tachyporus. [50] 84: 39-54 (*). **Borgmeier, T.**—Globicornis fulvipes, atacando couro de livros no Rio de Janeiro (Dermes.). [105] 6: 489-490. **Chagnon, G.**—Contribution a l'etude des coleopteres de la province de Quebec. [98] 63: 241-251, ill **Eggers, H.**—Borkenkafer aus Sudamerika (Ipidae). [105] 6: 388-394, ill. (S*). **Fisher, W. S.**—A new sphindid beetle from Cuba [115] 10: 201-202. **Hinton, H. E.**—A n. sp. of Ataenius from Mexico (Scarab.) [105] 6: 471-474, ill. **Hustache & Bruch.**—Description y notas biologicas acerca de un curculionido mirmecofilo. [105] 6: 332-338, ill. (*). **Liche, H.**—Beitrage zur ethologie der Dermestiden (100) (B), 2: 141-162, ill. **Liebke, M.**—Die Gattung Lachnophorus (Carab.). [105] 6: 461-468, (S*). **Ritcher, Chamberlin & Seaton.**—Additional collection records for Phyllophaga spreta (Scarab.). [10] 38: 185-186. **Thery, A.**—Quelques Buprestides nouveaux du Bresil. [105] 6: 469-471, ill. (*). **Uhmann, E.**—Schlussel der mir bekannten Cephalolia-Arten (Chrysom.: Hisp.). [105] 6: 481-485 (S),

HYMENOPTERA.—Bequaert, J.—Color variation in the South American social wasp, Polistes carnifex (Vesp.). [105] 6: 376-383, (*). **Cushman, R. A.**—The Ichneumonflies of the genus Brachcyrtus. [50] 84: 17-24, ill. (*). **Cushman, R. A.**—Poecilocryptus and Poecilopimpla (Ichneumon.). [91] 26: 464-466. **Marsh, F. L.**—Egg placing by Dibrachys boucheanus (Chalc.). [4] 68: 215-216. **Muesebeck, C. F. W.**—The genera of parasitic wasps of the Bra-

conid subfamily Euphorinae, with a review of the Nearctic species. [U. S. D. A., Miscl. Publ.] No. 241, 37 pp., ill. (*). **Richards, O. W.**—Further notes on the nomenclature of British aculeate Hymenoptera. [107] B, 5: 169-173. **Santschi, F.**—Fourmis nouvelles ou interessantes de la Republique Argentine [105] 6: 402-421, ill. **Wheeler, W. M.**—A singular Crematogaster from Guatemala (Formic.). [5] 43: 39-48, ill. (*). **Wheeler, W. M.**—Ecological relations of Ponerine and other ants to termites. [Proc. Amer. Acad. Arts & Sci.] 71: 159-243, ill. (*).

SPECIAL NOTICES.—An index to the authors (other than Linnaeus) mentioned in the catalogue of the works of Linnaeus preserved in the libraries of the British Museum. Ed. 2., 1933. Brit. Mus. N. H. 1936. 59 pp. **Dictionary** of biological equivalents. German-English. By E. Artschwager, Baltimore. 1930. 239 pp., ill. **Handbuch** der zoologie. von Kuekenthal u. Krumbach. Bd. 4, hft. 2. Insecta 2. pp. 1757-1884. **Mosquitoes** of the Ethiopian region. I Larval bionomics of mosquitoes and taxonomy of Culicine larvae. By G. H. E. Hopkins. Brit. Mus. N. H. 1936: 250 pp., ill. **Nomenclator animalium** generum et subgenerum. Preuss. Akad.Wissensch. zu Berlin. Bd. 5 Lief 22. Rhynch-Som. pp. 3058-3212. **Spinnentiere** oder Arachnoidea VII: Wassermilben oder Hydracarina II. (Hydrachnellae und Halacaridae). K. Viets. [Die Tier. Deutschlands] 1936: 289-574. **Upper Permian Insects** of New South Wales: III. The Order Copeognatha IV. The Order Odonata. V. The Order Perlaria or Stone-flies. R. J. Tillyard. [Proc. Linn. Soc. N. S. W.] 60: 265-279; 374-384; 385-391, ill. (*).

Doings of Societies.

The thirteenth annual meeting of the Rocky Mountain Conference of Entomologists was held August 16 to 21, 1936, inclusive, at the University summer camp, Centennial, Wyoming. The camp is located in a timbered area of the Medicine Bow Range of the Rocky Mountains, about 40 miles west of Laramie, Wyoming, and 100 miles north and west of Ft. Collins, Colorado. Members of the families of the entomologists joined in the gathering, meals being served in the large central lodge, with sleeping quarters in small cabins located in

the timber along a beautiful mountain stream. A total of 97, representing 17 states, were present. The following are those directly interested in entomology:

C. H. Richardson, Iowa; Leslie B. Daniels, Galen Hinkle, John L. Hoerner, C. R. Jones, Eleanor Davis McLaughlin, Miriam A. Palmer, Sam C. McCampbell, Elizabeth Heiss, Elmer Reed, Louis G. Davis, Maurice T. James, Asa C. Maxson, Geo. M. List, Max A. Sisson, J. H. Newton, Colorado; W. J. Schoene, Virginia; Reginald H. Painter, E. G. Kelly, Arthur L. Goodrich, Kansas; Fred D. Butcher, W. B. Mabee, Robert L. Shotwell, J. R. Parker, Montana; F. A. Fenton, Oklahoma; H. C. Severin, South Dakota; John C. Hamlin, W. W. Henderson, J. S. Stanford, C. J. Sorenson, Geo. I. Reeves, Utah; L. M. Gates, Otis Wade, Nebraska; Leonard Haseman, Ralph Voris, Missouri; Loyd L. Stitt, Arizona; C. L. Corkins, John W. Scott, L. Floyd Clarke, Margaret Greenwald, Wm. B. Owen, C. L. Farrar, A. P. Sturtevant, John D. Hitchcock, A. W. Woodrow, C. H. Gilbert, Wyoming; J. J. Davis, Indiana; R. L. Post, Elvira Rosenbauer, New York; J. H. Bigger, Illinois; C. L. Fluke, Wisconsin; H. L. Parten, Minnesota.

The following is a list of the more formal subjects discussed:

ORTHOPTERA—The Cairo, Egypt, International Grasshopper Conference, J. R. Parker; Reports of the Grasshopper Conditions and the Research and Control Work by States, F. A. Fenton, Okla.; E. G. Kelly, Kansas; Leonard Haseman, Mo.; S. C. McCampbell, Colo.; L. M. Gates, Nebr.; C. H. Richardson, Iowa; H. C. Severin, So. Dak.; C. L. Corkins, Wyo.; Fred D. Butcher, No. Dak. and Mont.; J. H. Bigger, Ill., and J. J. Davis, Indiana; The Grasshopper Problem, Fred Butcher; Grasshoppers in Oklahoma, F. A. Fenton (Motion Pictures); The 1936 Grasshopper Control Campaign in Jefferson County, Colo., L. G. Davis; Grasshopper Adult and Egg Surveys, R. L. Shotwell; Ecology of Grasshoppers, H. C. Severin; Intensive Area Studies of Grasshoppers, J. R. Parker; Laboratory Studies of Grasshopper Baits, C. H. Richardson; Orthoptera Classification, W. W. Henderson; The Mormon Cricket Prob-

lem, C. L. Corkins; The Sudden Rise of the Mormon Cricket Population, J. R. Parker.

COLEOPTERA—Staphylinid Beetles, Ralph Voris; The Alfalfa Weevil Situation in Nebraska, L. M. Gates; Blister Beetles, H. C. Severin.

DIPTERA—Florissant Diptera, M. T. James; Syrphidae Studies, Elizabeth M. Heiss; Bombyliidae and Certain Other Diptera, R. H. Painter; Mosquitoes, Wm. B. Owen.

HEMIPTERA—Lygus Bugs in Relation to Alfalfa Seed Production, C. J. Sorenson; Studies of Lygus Bugs in Arizona, Loyd L. Stitt.

HOMOPTERA—Aphids, M. A. Palmer; Plant Lice of the Sugar Beet, A. C. Maxson; The Tomato Psyllid as Related to Potatoes, L. B. Daniels; The Tomato Psyllid as Related to Tomatoes, Geo. M. List; A Progress Report on Control of Squash Bug, *Anasa tristis* De G., J. L. Hoerner.

LEPIDOPTERA — The Codling Moth in Virginia, W. J. Schoene; The Influence of Weather on Codling Moth in Missouri, Leonard Haseman; Codling Moth in Indiana, J. J. Davis; Codling Moth Control Work in Colorado, J. H. Newton.

APICULTURE—Work of the Intermountain Bee Laboratory, A. P. Sturtevant; Bee Behavior in Commercial Production, C. L. Farrar.

GENERAL—The Need of Keys for the Common Insects of the Rocky Mountain Region, J. W. Scott; Spray Residue Removal, C. L. Fluke; Peach Mosaic Control, Max A. Sisson; Extension Projects, E. G. Kelly; Resistance of Plants to Insect Attack, R. H. Painter; Enemies of Fish in the Yellowstone National Park, John W. Scott.

It was agreed that the Wyoming summer camp and the Colorado State College forestry lodge at Pingree Park, Colorado, where all previous meetings have been held, are both very desirable meeting places. The selection of the meeting place for next year was left to the officers. Those selected for 1937 were C. P. Gillette, Chairman; Claude C. Wakeland, Vice-Chairman; Geo. M. List, Secretary, and C. R. Jones, Treasurer.—GEORGE M. LIST, *Secretary.*

OBITUARY

On Monday, October 26th, 1936, HENRY G. KLAGES passed away in his seventy-seventh year, leaving his widow, Frances Rinkhoff Klages and a daughter, Mary, now Mrs. John C. Robinson of Lynchburg, Virginia. For thirty-three years he served on the staff of the Carnegie Museum, Pittsburgh, Pennsylvania, as assistant in the Section of Entomology, where he was entrusted with the responsibilities of mounting, arranging, and identifying beetles of the Museum collection under the guidance of the Curator. Although Mr. Klages did not have the advantage of academic training in entomology in his youth, nevertheless his keen interest in beetles, his discriminating and observing mind, his acquaintance with specialized literature and his prodigious memory qualified him as an entomologist of unusually practical competence. In performing his preparatorial duties in the Museum he acquired a familiarity with a wide range of insect groups outside of his favorite specialty. As an enthusiastic amateur entomologist he assembled with great care and diligence a fine collection of coleoptera from the local region and augmented it by extensive material from other regions of the United States and Canada. This private collection of his was constantly enlarged as opportunity would arise.

This institution is indebted to Mr. Klages for large series of insects gathered in different places in the vicinity of Pittsburgh during his frequent field explorations and has also acquired from him a whole collection of beetles at the beginning of Mr. Klage's association with the Museum.

In 1902 he published in the Annals of the Carnegie Museum "Supplement to Dr. John Hamilton's List of the Coleoptera of Southwestern Pennsylvania." It is regrettable that he did not contribute more frequently to coleopterological literature.

The biography of Mr. Klages is an example of a worthy self-made man who devoted himself painstakingly and successfully to his chosen field. He was born July 29, 1860, in the part of Pittsburgh known as the Southside. His parents were Doctor Gustav A. and Eliza Klages, his father receiving his

Doctorate in Medicine and Philosophy in the University of Heidelberg. On account of the meager circumstances of his family, Mr. Henry Klages had to relinquish school at an early age and earn his living. He became engaged as a glass blower in a factory but found time to give his attention to the study of entomology. He would also often indulge in preparing skillful drawings as a recreation and means of keeping illustrated records. His love for systematic collecting did not limit itself to the field of natural history. He was a keen philatelist, having assembled a valuable collection of stamps from many lands.

The loss of Mr. Henry Klages by the Museum is not to be easily replaced and all his friends and colleagues on the staff mourn his passing away and will preserve affectionate memories of his kindly, loyal, and sympathetic personality.—A. AVINOFF.

Dr. CARROLL FOX, medical director of the United States Quarantine Station at Rosebank, Staten Island, and chief quarantine officer of the port of New York, died of heart disease on May 24, 1936, at the United States Marine Hospital at Stapleton, Long Island. He was 61 years old and had been in the Public Health Service for 37 years. He was born in Philadelphia and entered the Health Service after two years as pathologist in the State Hospital in Scranton, Pennsylvania. He was sanitary adviser to the Navy during the World War. (*The Pennsylvania Gazette,* University of Penna., Oct. 15, 1936.) Dr. Fox specialized in the study of fleas and contributed papers to the NEWS and other journals on those insects; his last, in our pages, appeared in July, 1929, and described three new species, one of them from Ecuador and two from California. He was the author of a text book *Insects and Disease of Man* (Philadelphia, Blakiston, 1925). The title page of that volume states that he was lecturer on medical entomology to the class of student officers, Hygienic Laboratory, Washington, D. C., one time Assistant Director of Health, Philippine Islands and Associate Professor of Hygiene, Medical School, University of the Philippines. He received his M.D. degree from the University of Pennsylvania in 1897.

RECENT LITERATURE

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1018.—**Blaisdell** (F. E.).—Two new species of Euschides (Tenebrionidae). (Trans., **62**, 223-230, 1936) ..... .20

DIPTERA

1020.—**Cresson** (E. T., Jr.).—Descriptions and notes on genera and species of the Dipterous family Ephydridae. II. (Trans., **62**, 257-270, 1936) ..... .30

HYMENOPTERA.

1016.—**Mitchell** (T. B.)—A revision of the genus Megachile in the Nearctic region. IV. Taxonomy of subgenera Xanthosarus, Phaenosarus, Megachiloides and Derotropis (Megachilidae.) (Trans., **62**, 117-166, 4 pls., 1936) 1.00

1013.—**Pate** (V. S. L.).—Studies in the nyssonine wasps. I. Species of Psammaecetes, a n. subg. of Hoplisoides (Sphecidae). (Trans., **62**, 49-56, 1936) ..... .20

ODONATA.

1015.—**Needham and Fisher.**—The nymphs of North American Libelluline dragonflies. (Trans., **62**, 107-116, 2 pls., 1935) ..... .20

ORTHOPTERA

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(Continued)

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